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October 7, 2002

EX PARTE – Via Messenger

RECEIVED

Ms. Marlene Dortch
Secretary
Federal Communications Commission
The Portal
445 1st Street, S.W.
Washington, DC 20554

OCT - 7 2002

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Re: CC Docket Nos. 01-338, 96-98, 98-147

Dear Ms. Dortch:

On October 4, Tom Koutsky and George Ford of Z-Tel and I met with Bill Maher, Jeff Carlisle and Rob Fanner of the Wireline Competition Bureau. We distributed and discussed the attached documents at these meetings.

In accordance with FCC rules, a copy of this letter is being filed in the above-captioned dockets.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris J. Wright".

Christopher J. Wright
Counsel to Z-Tel Communications, Inc.

043



Unbundled Local Switching and UNE-P

Thomas M. Koutsy

George S. Ford

Christopher J. Wright

October 4, 2002

CC Docket Nos. 01-338, 96-98, 98-147



Today's Agenda

- What Z-Tel does with UNE-P
- Empirical research on unbundling
- Legal hurdles to any ULS restriction
- Impairment Standard
- Forging role for state commissions



Z-Tel's Innovative Uses of UNE-P



2

3

④

6

❶ Network Interface Device

② Local Loop

③ Local Switching

④ Interoffice Transport

5 Signaling and Call Related Databases (AIN)

⑥ Operations Support Systems

Access to the Switch Port in UNE-P allows CLEC to integrate innovative technology



We're What the Act Was About

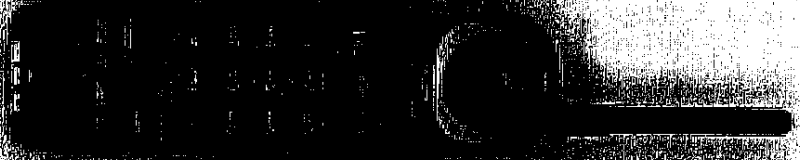
**Innovative and new local services to
*mass-market residential and small
business customers***

For example:

- Remote access to calling & messaging via phone or Web
- Internet-accessible voicemail
- Multiple-number Call Forwarding
- Dial-by-voice functionality
- Web conferencing



What the Bells Don't Offer...



- [1] Place Call
- [2] Message Center ————— Mom
- [3] Account Options ————— Dad
- [4] PVA(Personal Voice Assistant) ————— Kids
- [5] Conference Calling
- [6] Unified Messaging Coming Soon!
- [7] Tasks & Calendaring Coming Soon!
- [8] Content Coming Soon!
- [9] Yellow Pages Coming Soon!
- [0] Customer Care



Intelligent Dial Tone

Introducing Z-Line Personal Voice Assistant (PVA)



Speech-Activated Calling

FREE FOR 30 DAYS!

Introducing Z-Line PVA, your Personal Voice Assistant!

- Make personal calls without dialing
- Send voice messages without dialing
- Use with your existing phone
- FREE 30-day trial period with no activation
- FREE for 30 days with no activation
- No hidden fees or hidden costs

Just tear off the card to get started!

Get **30 days** of speech-activated long distance, and more, **FREE!**

Visit www.ztel.com/pva today.

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1st Nationwide Local Phone Company



Mass-market consumers in red can get Z-TEL service today.



Empirical Research on Effects of Unbundling



UNE-P: The Future

- In considering, “What happens after UNE-P?”, FCC should not adopt paradigm that “locks in” particular model of competitive entry
- UNE-Loop entrants are *just* as dependent upon ILEC as UNE-P entrants
 - They cannot serve customers without loops and collocation
 - UNE-Loop entrants will have invested millions of dollars into a network architecture that mirrors the Bells – same COs, same loops
 - Potential for UNE-Loop “lock in” – once millions invested in ILEC network architecture, will that entrant *ever* migrate away from ILEC any further?
- UNE-P entrants free to migrate customers *totally* away from ILEC network once those networks are built
 - Since no CapEx associated with ILEC architecture, **UNE-P customer base is mobile**
 - If FCC wants new networks, facilitating open bidding for mass-market customer bases helps – locking CLEC customer bases into perpetual ILEC loop dependence does **not**
 - **These alternative networks will not be built without “customers first” – UNE-P provides that customer base**
 - *See Beard, Ford and Spiwak. “Why AdCo?”, 54 Fed Comms. L. J. 421 (2002).*



Research Supports Pro-Competitive, Pro-Investment Effects of UNE-P

- ***Residential/Small Business Competitive Entry greater where UNE Platform available without restriction***
 - Z-Tel Policy Paper No. 3
 - Data: FCC Local Competition Reports

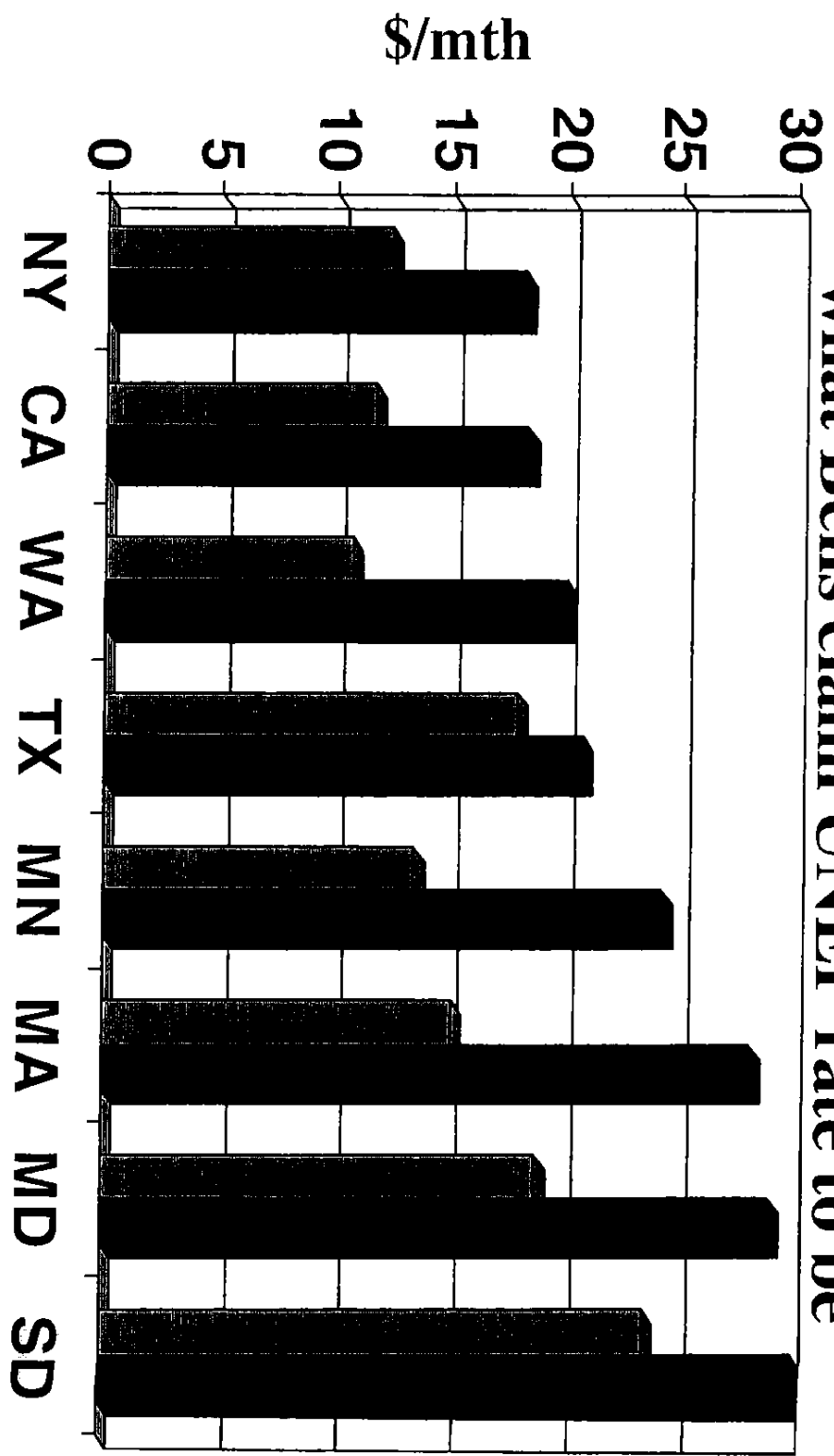
- ***UNE-P promotes facilities investment***
 - Z-Tel Policy Paper No. 4
 - Data: looks at switch deployment over time, using FCC Local Competition data, LERG

- ***Bells make money selling UNE-P to Z-Tel***
 - September 23 and 30, 2002 Z-Tel ex parte letters to Chairman Powell
 - SBC CFO confirms that competition in Texas – *where UNE-P has been and is now available without restriction* – is “workable” and “doable”
 - Wall Street reports substantially misstate actual costs of UNE-P



Real UNE-P Prices

Z-Tel actual payments >25% more than what Bells claim UNEP rate to be



■ UBS Warburg ■ Z-Tel Actual



Bells Crying Wolf?

- BOCs average over 50% EBITDA margin selling UNEP to Z-Tel
- Margins **more** than sufficient to cover depreciation and “investment”
 - Z-Tel UNEP payments compared to actual Bell ARMIS operating costs
 - Z-Tel Sept. 23, 2002 letter to Chairman Powell and NARUC President Nugent
 - Z-Tel Sept. 30, 2002 letter to Chairman Powell and NARUC President Nugent
 - Phoenix Center Policy Paper No. 16
- Bells dramatically overstate impact of UNEP; understate UNE-P revenue by over 25% -- or \$7/month per line.
- What happens to Bell profits if UNE-P lines immediately move to facilities? *Bells lose another \$3B per year.*

Debate is *not* about “what type of competition to have” but about returning lost customers to Bells and increasing prices



More Research...

- ***Lower UNE prices do not “discourage” facilities-based entry***

- Beard, Ford and Koutsky, *Facilities-Based Entry into Local Telecommunications* (2002) (attached to Z-Tel Comments)
 - Study also supports findings of Policy Paper No. 4
 - Data: FCC Local Competition data, LERG, state UNE prices
 - **Study entirely un rebutted the record**
- Pelkovits and Ford, *Unbundling and Facilities-Based Entry by CLECs* (2002)
 - Data: ARMIS, FCC Form 477 data (latest available data)

- ***Unbundling and “facilities-based” entry are not substitutes***

- Beard and Ford, *Make or Buy? Unbundled Elements as Substitutes for Competitive Facilities* (2002)
- Data: UNE-P Fact Report, FCC Form 477 data and UNE pricing data
- Estimated demand curves for unbundled loops purchased with switching (UNE-P) and without switching (UNE-L)
- Comparing elasticity of these curved indicates whether CLECs view UNE-P and UNE-L as substitute forms of entry, or whether they are different forms of entry to serve different markets
- Results: **UNE-P and UNE-L are not substitutes**
- Findings support Z-Tel argument that impairment not solved by availability of UNE-L – in fact, forced migration to UNE-L risks unserving the market UNE-P currently supports



Legal Hurdles

- Core elements of UNE-P (loops, switching and transport) specifically listed in section 271 checklist
 - Legislative history: checklist contains “at a minimum” what should be unbundled under section 251
 - Consistent with purpose of the Act to provide “parity” of “equal access” between IXC’s and ILEC’s into one another’s markets
- Restricting any section 271 element would require section 10 forbearance (Verizon petition) – which is sharply limited
- Application of forbearance by FCC as requested by Verizon exceeds constitutional bounds of FCC’s authority
- Additional state unbundling or access requirements specifically preserved in section 251(d)(3).
 - States adopted core elements of UNE-P under state law before and after Act passed.
 - There is no legal “inconsistency” between an FCC decision not to order unbundling nationally and a state order ordering unbundling locally



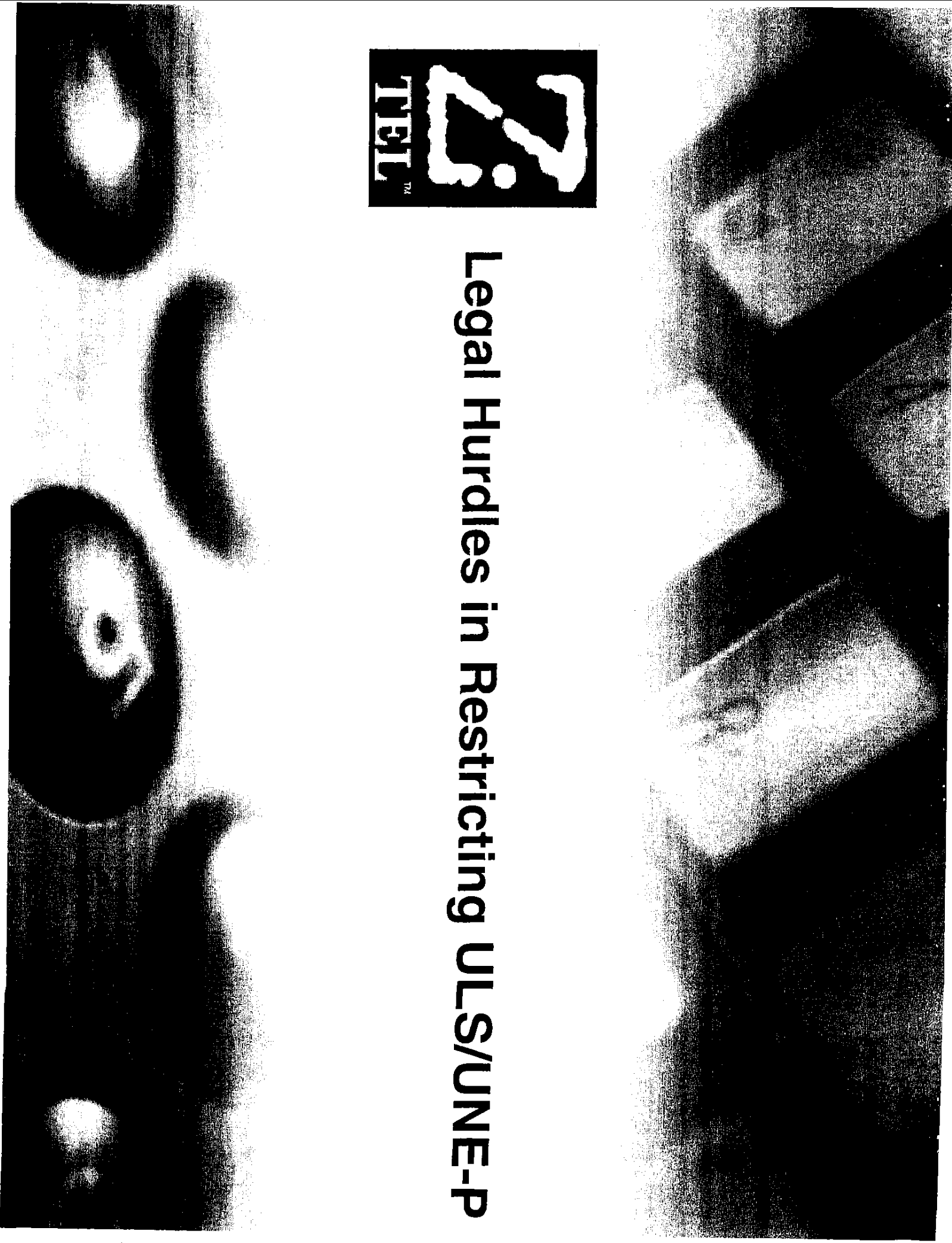
Utilizing State commissions can help

USTA Issue: fact-based, granular analysis that does not provide unbundling of “unvarying scope”

- Rather than illegally preempt states, enlist their assistance
- States can **help** FCC write rules that pass legal muster
- Example: States do fact-finding with regard to whether impairments continue to exist – with particular focus upon whether reduction in output would occur in their states
 - Discovery
 - Cross-examination
 - States that have done this to date have found the UNEP access is warranted to serve the mass market (see Texas) – **current evidence in Triennial Review docket is insufficient to rebut those findings**
- Example: States examine impact of unbundling and UNE-P on retail price regimes (as in NY and IL today)
- FCC can utilize these state findings to determine future federal unbundling rules or applications of those rules



Legal Hurdles in Restricting ULS/UNE-P





Legal Hurdles

- Core elements of UNE-P (loops, switching and transport) specifically listed in section 271 checklist
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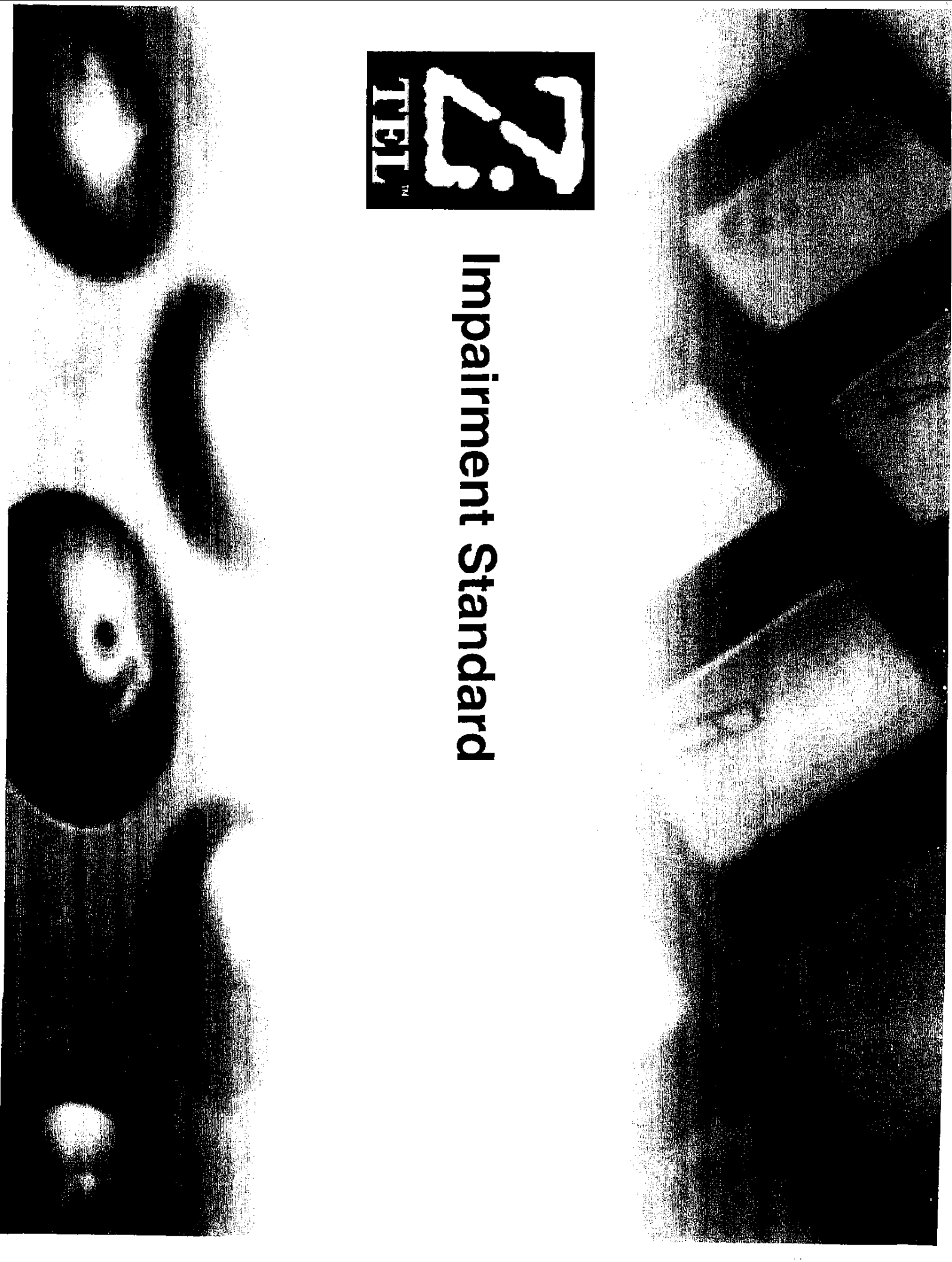


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Impairment Standard





Proposed Impairment Framework

1. Begin with market definition – the “service” requesting carrier “seeks to provide”
 - E.g.: the local telecommunications mass-market (Z-Tel Comments Attachment A, or >139MM lines)
 - Consistent with FCC precedent in prior Orders
 - Provides “granularity” *USTA* requests
2. What are the demand-side requirements of “serving” that “market”?
3. What are supply-side requirements of “serving” that “market”?
4. Without unbundled access, can entrant serve as many customers within 2 years as with unbundled access?



Ford Reply Decl. Section III

Impairment exists when a lack of access to an ILEC network element reduces a CLEC's output by a small, but significant, and non-transitory amount

- Complies with *USTA* -- a fact-based analysis
- Requires FCC to consider whether alternatives to element...
 - Are available from other sources in sufficient quantity and quality
 - Can be utilized by entrant in seamless manner
 - Can be implemented without adversely affecting customer service *at service level demanded by consumers for that service*
 - Can be implemented without adversely affecting competitive output
- Flexible enough to consider prices, the “profitability” of particular entry strategies, the “difficulty” of self-provisioning
- “Significant and non-transitory” are objective “limiting principles” grounded in antitrust law



But under any reasonable impairment standard, Z-Tel is impaired to serve the Mass Market without ULS/UNE-P



The “Analog Mass Market”

1. In BOC Merger Orders, FCC has identified “mass market” for local services that includes residential and small businesses
2. Demand-Side Characteristics of the Mass Market
 - Low revenue per month (\$40-80/line)
 - Highly reliable service (turn up service quickly, repairs <24 hrs, etc.)
 - Regulatory requirements (lifeline, installation/disconnection service requirements)
 - Diffuse consumer base
 - No long-term contracts/month-to-month service
 - High churn (5%-10%/mth)
3. To profitably serve Mass Market, carriers must...
 - Keep costs of customer acquisition low
 - Have reliable, electronic method of service provision
 - Be able to service churn profitably
 - Sell through mass market advertising techniques (ubiquitous coverage with consistent product)



Essentially No UNE-L Competition in Mass Market

- The BOCs' own "UNE-Fact Report" suggests that CLECs -- *i.e.*, putting aside cable franchises and small ILECs -- currently serve at most 1/10 of 1% of the mass market via UNE-L.
- Of the nine "CLECs" in "Figure 4" of the BOCs's Report that supposedly serve 25,000 or more residential lines, most are either cable overbuilders or ILECs.
- The Act does not require a competitor to buy a cable company or an ILEC in order to compete.
- Moreover, nearly all of the "Figure 4" companies either never sought to serve the mass market or have abandoned plans to do so
- Without proof of actual market success, claims that CLECs simply can "transition" to UNE-Loop to serve Mass Market ring hollow



Mechanized Provisioning: Essential to Providing Mass Market Services

- Over 139MM analog dialtone lines on Bell/GTE networks – supporting competitive entry requires large quantities
- ILECs serve this market in largely automated manner – they do not do a hot cut each time an analog dialtone customer adds a line or turns up service
- With low revenue/mth, regulatory service quality requirements, and high churn – CLECs *must* be able to have similar automated access to serve these customers profitably
- Project hot cuts do not and cannot solve this fundamental disparity – because still relies on manual provisioning for *all* CLEC lines while ILEC keeps mechanized access

Loop-port combination of UNE-P is today the *only* access method that provides mass market entrants like Z-Tel automated, nondiscriminatory provisioning



The Hot Cut Bottleneck

- No wholesale market of sufficient capacity exists anywhere – let alone with sufficient capacity
- “Hot-cut” capacity limits self-provisioning/UNE-L entry
 - Example: 5% churn per month
 - If ILEC can provide only 15,000 hot cuts per month in a state...
maximum Mass Market Penetration for that CLEC is 300,000 lines
 - *In NY, that would cap a CLEC's entry at 2.3% of the market*
 - Project hot cuts not adequate to serve mass market, as manual provisioning and mass market customers not sign term contracts.
 - “Transition” to UNE-L would require CLEC to enter two businesses simultaneously *and* double-pay for switching while conversion happened
- Mechanized Access through UNE-P *can* support such volumes
 - NY: 250,000 UNE-P conversions in December 1999
 - GA: BellSouth converted 1% of its lines via UNE-P in Summer 2001
 - Over 9MM UNE-P lines in service nationwide today



Provisioning Cost Barrier

- UNE-L conversions are expensive and manual
 - Manual Provisioning Process; backward-looking multi-step process
 - Verizon and NYPSC: each hot cut costs over \$180!
 - FCC cannot assume that the hot cut rate is lower – nor can it subsidize below-cost hot cuts
- Even if manual hot cuts were available in unlimited quantities, still place material limitation on quality of CLEC product
 - CLEC pay for manual provisioning of every line = cannot compete with Bells who have mechanized access
 - Manual error: to support mass market entry, huge volumes would be required
 - Even an optimistic success rate would still mean putting out of service hundreds of thousands of existing UNE-P customer lines (450,000 if 95% “success”)
- Transport costs and inefficiencies add to UNE-L costs



Network Impediments to Mass Market Entry

- Z-Tel retail customer densities not sufficient to warrant collocation or transport investment
 - Z-Tel has UNE-P lines in 4207 ILEC central offices
 - In 87% of those COs, Z-Tel has less than 50 lines
 - In 94% of those COs, Z-Tel has less than 100 lines
- Collocation is expensive; ILECs fight efficient arrangements
- ILECs possess switch/transport network density economies because they were bequeathed monopoly by the state
- Even with interoffice density, CLECs cannot match efficiencies in ILEC switch/transport network with only one switch
 - Example: CLEC must pay for interoffice transport of a call **even if** that call originates and terminates at same end office
 - Bells do not incur that cost with switches in each CO



For More Information...

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**The Commission Should Continue to Require Unbundling of Local Switching
and Other Elements Needed to Serve the Mass Market**

- I. Z-Tel's ability to serve the mass market would be "impaired" without access to the UNE platform within any reasonable meaning of that term in section 251(d)(2)(B).

4. **Impairment Framework:**

- Section 251(d)(2)(B) focuses the Commission's attention on whether the "failure to provide access" to a network element would **"impair the ability of the [requesting] carrier . . . to provide the services it seeks to offer."**
- Section 251(d)(2)(B) thus indicates that the impairment analysis should be a granular, service-specific inquiry into whether failure to provide the element would **reduce CLEC output.**
 - The alternative impairment framework proposed by BOCs is inconsistent with the Act because: (1) it rewrites the statute to ignore its express focus on the ability of the requesting carrier to provide the "services it seeks to offer"; and (2) it rewrites the statute to replace "impair" with "essential." Congress chose "impair," which clearly requires a far more limited showing of reduced output than would "essential."
- Focusing on intermodal competition, as urged by the BOCs, would be flatly inconsistent with the Act's emphasis on whether the **requesting carrier** would be impaired. Congress did not require new entrants to buy a cable operator as a condition of entry.
- **But whether Z-Tel would be "impaired" without access to the UNE platform does not turn on what impairment framework is adopted.** As set forth below, under any reasonable meaning of the term "impair," the record here mandates a finding of impairment absent access to the UNE platform.

B. **Z-Tel Has Demonstrated Impairment:**

- *The Mass Market is Unique:* The **mass market** to which Z-Tel seeks to offer services has distinctive characteristics that currently make it nearly impossible to serve that market without unbundled switching and the other elements of the UNE platform. These characteristics include: high churn; low incremental revenue per account; need for headache-free installation and prompt customer service; and unwillingness to enter annual contracts.
- *Hot Cut Costs are Prohibitive in the Mass Market:* The primary costs of self-provisioning switching are not for the switch itself, but for start-up, collocation, maintenance and, most importantly, hot cut costs. Z-Tel's analysis of the New

York market indicated that **even if the switch itself, collocation, and maintenance were free**, it would not be profitable to deploy a switch to serve mass-market customers in New York at a “true” hot cut cost of over \$185 found by the New York Commission.

- *Hot Cut Capacity is Insufficient to Serve the Mass Market:* The ILECs could not possibly perform the millions of hot cuts per month that would be needed in a competitive market. For example, the New York Commission recently found that if Verizon’s current UNE-P orders were converted to UNE-L orders, **Verizon’s hot cut capacity would have to expand by 4400 percent**, which is clearly not going to happen. New York Commission Comments at 4. (In fact, there are statements from the CWA in New York that Verizon is instead cutting back its hot cut capacity.) At current conversion rates and capacity, the New York Commission said that “it would take Verizon **over 11 years** to switch all existing UNE-P customers to UNE-L.” *Id.* And that would not account for adding new customers, or churn. Rather than seriously addressing the capacity issue in its Reply, Verizon baldly asserts that it is not a problem.
- *Hot Cut Reliability Remains Problematic in the Mass Market:* The BOCs tout problem-free hot cut performance 90+ percent of the time – but it is extremely difficult to build a mass-market customer base when there *any* significant chance of losing phone service. These errors occur in bulk, or “project” hot cuts as well – because they still ultimately rely upon manual provisioning. **Unlike business customers, mass market customers cannot save enough to justify the possibility of losing service.**

C. **The BOCs’ “UNE-Fact Report” Supports Z-Tel’s Arguments:**

- *The BOCs’ Report Suggests that Competitive Carriers Currently Serve, at Most, About 1/10 of 1% of the Mass Market via UNE-L:* “Figure 4” of the “Fact” Report shows that – putting aside cable franchises – the BOCs were able to find only nine companies that purportedly serve 25,000 or more residential lines. But the vast majority of those lines are **not served via UNE-L**. The “Figure 4” companies are primarily either ILECs or cable overbuilders – and no one seriously thinks that the Act is only about enabling competition by such companies. And even among those companies, **most either never sought to serve the mass market, or have abandoned plans to do so.**
- *The BOCs’ Latest List of CLEC-Deployed Switches:* The BOCs’ list of CLEC switches is entirely dominated by companies that obviously do not use their switches to provide services to the mass market via UNE-L. Instead, they primarily serve medium-sized and large business customers, for whom it makes economic sense to aggregate loops at the customer’s premises and provide service at a DS1 interface or higher. **This avoids the need for manual analog hot cuts at the ILECs’ central office to serve these customers.** (Large businesses with intensive bandwidth needs are a different market than the mass market – they will

agree to sign long-term contracts and can tolerate some degree of manual installation.) Z-Tel (like other commenters) estimates that aggregation may become economically viable at about 16-20 lines.

D. Z-Tel's Impairment Arguments are Fully Consistent With USTA v. FCC:

- *Z-Tel has Urged that Impairment Analysis Should be Market-Specific:* USTA faulted the Commission for adopting impairment rules of “unvarying scope.” Z-Tel wholeheartedly agrees with the D.C. Circuit’s view that the large business and mass markets should be distinguished and analyzed separately.
- *Cost Disparities:* USTA cautioned that impairment cannot properly be based on “cost disparities” that would be “faced by virtually any new entrant in any sector of the economy.” But the **hot cut (and related) costs giving rise to impairment for CLECs seeking to serve the mass market are unique to that market** – Z-Tel is not aware of *any* other industry where new entrants must pay established monopolists for the privilege of attracting the monopolists’ customers.
- *Verizon:* The Commission must be cautious not to over-read USTA. Verizon expressly indicated that the Act is intended to promote broad unbundling to give “aspiring competitors every possible incentive to enter local” markets and overcome the monopolists historical advantage. Accordingly, *dicta* in USTA to the effect that the Commission should limit unbundling to facilities with natural monopoly characteristics must be viewed with skepticism, particularly since the Commission’s next order will not necessarily be reviewed in the D.C. Circuit.

II. The Commission should continue to recognize state authority to establish additional unbundling requirements.

- *Plain Language:* Section 251(d)(3) expressly provides that the FCC “shall not preclude the enforcement of any regulation, order, or policy of a state commission that . . . establishes access and interconnection obligations of local exchange carriers.” When the Commission tried, in 1996, to construe this language to prohibit state unbundling rules that were inconsistent with the Commission’s regulations, the Eighth Circuit reversed. The court held that section 251(d)(3) was meant “to shield state access and interconnection orders from FCC preemption.” *Iowa Utilities Board*, 120 F.3d at 807.
- *States are Better Able to Undertake the Required Granular Analysis:* As NARUC’s comments noted, “[s]tate regulators have access to the detailed real-world information that is essential” to determining what UNEs should be unbundled in particular markets. NARUC Comments at 7. State regulators are able to employ **fact-finding procedures**, including detailed discovery, live testimony, and cross-examination, that are not generally available to the FCC. *Id*

- *State commissions support the UNE platform for mass market consumers:* Those states that have undertaken detailed analysis of the need for UNE-P have generally endorsed state-wide unbundling of the UNE platform for the mass market. New York and Texas, in particular, correctly emphasized hot cut bottleneck problem in reaching that conclusion.

III. The section 271 checklist requires the BOCs to unbundle loops, transport, and switching, and there is no basis for forbearance from its requirements at this time.

4. Section 271

- *Plain Language:* The second item on the checklist requires BOCs to provide “[n]ondiscriminatory access to network elements” in accordance with sections 251(c)(3) and 252(d)(1). Items four through six of section 271 require that “loop transmission,” “transport,” and “switching” be provided on an “unbundled” basis. The two provisions thus plainly require that the BOCs provide unbundled access to loops, transport, and switching at cost-based rates and in accordance with the other provisions governing interconnection agreements.
 - There is absolutely **no textual support** for Verizon’s contention that loops, transport, and switching suddenly cease to be “network elements” if the Commission finds that they need not be unbundled under section 251(d)(2).
- *The Problem of “Surplusage”:* Construing the checklist as the BOCs advocate to require only what section 251(d)(2) requires would violate a “cardinal principle” of statutory construction – it **would render the checklist items mere “surplusage.”** The checklist items have meaning only if BOCs are required to unbundle those elements even *after* those items are not required to be unbundled pursuant to the standards of section 251.
- *The Commission’s Prior Construction of Section 271:* In the *UNE Remand Order*, the Commission expressly construed section 271(c)(2)(B) to “require[] BOCs to . . . provid[e] . . . to requesting carriers the following network elements: local loops, transport, switching, databases and signaling.” 15 FCC at 3905. Agreeing with the BOCs now that section 271 does not require unbundling independent of that mandated by section 251 would oblige the Commission to repudiate its earlier interpretation of section 271.
- *Maintaining Unbundled Switching and the Other Elements of the UNE-P Necessary to Serve the Mass Market Would Serve the Core Purposes of the Act*
 - *Congress Intended the Act Is to Eliminate the Local Monopoly:* According to the Supreme Court, the Act was intended to introduce competition to “persistently monopolistic local markets, which were

thought to be the root of natural monopoly in the telecommunications industry.” *Verizon*, 122 S. Ct. at 1654. The act was “designed to give aspiring competitors every possible incentive to enter local retail telephone markets, short of confiscating the incumbents’ property.” *Id.* at 1661.

- There is absolutely no statutory basis for Verizon’s view that Congress intended competition using leased network elements to be just a short-term, transitional measure. Both the *AT&T* and *Verizon* cases indicate that Congress intended UNE-based competition to be one of three equally important modes of competitive entry.
- *Congress Intended Parity Between Local and Long Distance Entry:* Congress expressly envisioned that “[w]hen we open local service exchanges to competition, then the Bell operating systems will [be able to] go out and compete in the long distance market.” 141 Cong. Rec. S8,135 (Sen. Dorgan). As Senator Breaux put it, “You can get in my business when I can get in your business.” 141 Cong. Rec. S8,153. BOCs can now “get in” the long distance business (once they receive section 271 authorization) by simply leasing interexchange capacity and paying less than \$5 per customer to switch the customer electronically to its service. In contrast, for a CLEC like Z-Tel to “get in” the local market via UNE-L (as the BOCs would require), the CLEC must pay tens or even hundreds of dollars per customer in hot cut costs. Because that is simply not a viable entry strategy, under the BOCs’ approach, no “parity” would exist.
- *Congress Intended that the BOCs Must Provide Loops, Transport, and Switching for the “Reasonably Foreseeable Future”:* Congress knew that local competition would not develop overnight. Senator Pressler, the sponsor of the Senate Bill, explained that the checklist would require the BOCs to continue to unbundle the three core elements for the “reasonably foreseeable future.” 141 Cong. Rec. S8,469 (Sen. Pressler).

B. No Justification for Forbearance

- *Verizon’s Petition is Premature:* So long as the BOCs are required to unbundle loops, transport, and switching under section 251(d)(2), the question of “forbearance” from 271 does not arise. The Commission should require Verizon to refile after issuance of a Triennial Review decision, to **avoid wasting everyone’s time now**.
- *Verizon’s Forbearance Argument Just Repeats its Erroneous Statutory Interpretation:* Verizon’s “forbearance” argument essentially ignores the requirements of section 10. Verizon’s entire “forbearance” argument rests on its

assertion that the section 271 checklist adds nothing to the requirements of section 251(d)(2). That argument would render the checklist mere “surplusage.”

- *The Anti-Backsliding Provision:* Section 271(d)(6) provides for a range of penalties “if the Commission determines that a Bell operating company has ceased to meet any of the conditions required for [section 271] approval.” Accordingly, it is clear that section 271 is not “fully implemented” simply because the checklist has been initially satisfied. Section 271 imposes continuing obligations.
- *Constitutional Issues:* “Forbearing” from enforcing section 271 would raise serious questions about the Commission’s section 10 authority. The forbearance provision represents an unprecedented delegation from Congress to the Commission of authority to repeal portions of the Act. The Supreme Court has held that the President may not constitutionally be authorized to repeal portions of an Act, *see Clinton v. City of New York*, 524 U.S. at 439, and neither may the Commission.
- *Unbundling Should be Maintained Until There are Alternative Sources of Supply:* Contrary to the BOCs arguments, Z-Tel does not urge that the UNE platform should be preserved in perpetuity. The key question, though, is: “What must occur before a CLEC like Z-Tel **could viably serve the mass market**, in the absence of the platform?” The answer is clear: Z-Tel would need to be able to get the elements of the platform from someone other than the current monopolists – *i.e.*, **from a fully-functional wholesale market** that can provide seamless conversions at sufficient capacity to meet demand. That is the situation today for the BOCs in the long-distance market, where they lease wholesale capacity.

WHERE UNE-P IMPLEMENTED, CONSUMERS BENEFIT STATEWIDE

With manually-provisioned UNE Loops, competition is scant and concentrated

The ability to provision orders electronically and ubiquitously allows competitors to utilize UNE-P to offer mass market residential and small business consumers a competitive choice today. The data below, obtained from SBC and BellSouth through discovery in state proceedings and aggregated here, clearly shows that UNE-P provides **geographically ubiquitous** competitive mass-market coverage. Other forms of entry – notably UNE Loop – are not ubiquitous. Because of this potential ubiquitous competitive response, it is no surprise, then, that State regulators have implemented UNE-P under state law as part of retail price cap regulation of ILECs

Where's the Competition in Texas?

Local Entry By Size of SBC Central Office (Oct 2001)

Wire Center Ranking	Average Lines/CO	Competitive Penetration	
		UNE-L	UNE-P
The 10% Largest Wire Centers	102,571	2%	8%
Next 10%	54,443	1%	11%
Next 10%	34,139	1%	12%
Next 10%	20,331	0%	13%
Next 10%	12,309	0%	16%
Next 10%	7,218	0%	17%
Next 10%	4,265	0%	18%
Next 10%	2,532	0%	21%
Next 10%	1,373	0%	25%
Smallest 10% Wire Centers	485	0%	21%

Where's the Competition in Georgia?

Local Entry By Size of BellSouth Central Office (2002)

Wire Center Ranking	Average Lines/CO	Competitive Penetration	
		UNE-L	UNE-P
The 25 Largest Wire Centers	67,977	3%	6%
Next 25 Largest Wire Centers	40,012	2%	9%
Next 25 Largest Wire Centers	26,616	1%	8%
Next 25 Largest Wire Centers	13,542	0%	8%
Next 25 Largest Wire Centers	6,943	0%	6%
Next 25 Largest Wire Centers	3,875	0%	7%
Smallest 28 Wire Centers	1,697	0%	6%

Papers on Local Telecommunications Competition and Policy

Papers on Local Exchange Competition and Policy

All of these papers can be downloaded at either www.telepolicy.com or www.phoenix-center.org.

Why ADCO? Why Now? An Economic Exploration of Industry Structure for the "Last Mile" in Local Telecommunications Markets, Randy Beard, George Ford, and Larry Spiwak (published in the *Federal Communications Bar Journal*, 2002).

This paper explains why the "transition to facilities" argument is meritless. The supply-side economics of local telecommunications prohibits a large number of facilities-based competitors. This is not true (to the same degree) on the retail side. Much like the current long-distance markets, where about 900 retailers are serviced over about 7 nationwide fiber networks, industry structure in the local market must bifurcate into a retail and wholesale segment for real competition to exist. Unbundling allows CLECs to acquire market share, which then serves as a non-ILEC demand for local exchange network. Without unbundling, there is not demand for alternative networks – consumers don't demand network, carriers do. Without available and effective demand, the costs of constructing local network can never be recovered – as is evident in the collapse of the segment of CLEC industry which adopted a "built it and they will come" business plan. The prudent path, made possible by unbundling, to "build it after they come."

Facilities-Based Entry in Local Telecommunications: An Empirical Investigation, Randy Beard, George Ford, and Tom Koutsky.

This paper shows, using econometrics, that the deployment of end-office switching by CLECs is not attenuated in markets where unbundled switching prices are low. Instead, CLEC deployment of switches is actually higher in markets with low switching rates. A theoretical model explains the possible relationships between deployment and unbundling, and the theory provides no unambiguous conclusions (low switching rates may increase or decrease CLEC switch deployment). Thus, the issue is plainly empirical. The empirics show that low switching rates increase deployment. In markets where access to unbundled switching is restricted, there are fewer CLEC switched deployed.

Make-or-Buy? Unbundled Elements as Substitutes for Competitive Facilities in the Local Exchange Network, Randy Beard (Auburn University) and George Ford, PHOENIX CENTER POLICY PAPER NO. 14 (September 2002).

The amount of CLEC entry using unbundled elements is highly sensitive to the price for such elements. A 10% increase in the price of an unbundled loop or switching reduces CLEC lines by more than 10% (i.e., the demand for UNEs is *elastic*). The cross-price elasticity between loops purchased with and without switching is zero. Thus, UNE-Platform does not reduce the demand for UNE-Loop (as the BOCs claim). From an antitrust perspective, the findings in this paper indicate that UNE-Loop and UNE-Platform service different markets. The paper also includes a statistical test of impairment with respect to switching, and finds that impairment exists.

A Fox in the Hen House: An Evaluation of Bell Company Proposals to Eliminate their Monopoly Position in Local Telecommunications Markets, PHOENIX CENTER POLICY PAPER NO. 15 (September 2002).

Between UNE-P, UNE-L, and full facilities-based entry, the BOCs' revenues are greatest with UNE-P. The other forms of entry leave BOC network stranded. Why then, do the BOCs prefer facilities-based competition? The answer is obvious. While the BOCs may lose more profit on a per-line basis from facilities-based entry, there is considerably less of it. By slowing competitive growth to a trickle, the total loss in margin is trivial. UNE-P, alternately, allows for the rapid growth of competition, and while BOC margin loss is less, the total margin loss is greater.

What Determines Wholesale Prices for Network Elements in Telephony? An Econometric Evaluation, George Ford and Randy Beard (Auburn University), PHOENIX CENTER POLICY PAPER NO. 16 (September 2002).

The BOCs' claim that state commissions have failed to base element rates on forward-looking cost (as required by the FCC's TELRIC standard) is evaluated econometrically. In contrast to the BOCs' assertions, forward-looking economic cost is the primary determinant of wholesale prices for network elements. Retail prices play no direct role in determining wholesale prices for UNEs. However, the state commissions have, according to the statistical model, set wholesale prices above forward-looking costs to provide the BOCs about half of their existing retail margins. While so, forward-looking costs are, by far, the more important determinant of wholesale prices for UNEs. Mr. Seidenberg was wrong – the state commissions 'do get it.'

Unbundling and Facilities-Based Entry by CLECs: Two Empirical Tests, by George S. Ford, Ph.D. and Michael D. Pelcovits, Ph.D. (former MCI Chief Economist, now with the consulting firm MICRA).

The number of lines served on CLEC-only facilities (i.e., pure facilities based) is positively related to market size and market density, and negatively related to the price of unbundled loops and unbundled switching. In an alternative test, the authors find that RCN's entry is negatively related to the price of unbundled loops. Thus, there is no evidence that there is more facilities-based entry where UNE rates are higher. In fact, the opposite is true.

Preliminary Evidence on the Demand for Unbundled Elements, Robert Ekelund, Jr. and George Ford (forthcoming in *Atlantic Economic Journal*, December 2002).

This paper estimates the demand elasticity for UNE-Platform. The paper finds that a 10% increase in the price of UNE-P elements reduces quantity of UNE-P sold by 27%. Thus, it is little surprise that the BOCs are now attacking the price of UNE-P elements, as well as availability.

Innovation, Investment, and Unbundling: An Empirical Update, Robert B. Ekelund, Jr. and George Ford (forthcoming in the *Yale Journal on Regulation*, Spring 2003).

In an article in the *Yale Journal on Regulation*, Bell advocates Thomas Jorde, Gregory Sidak, and David Teece (JST) commented on some potential economic consequences of the Telecommunications Act of 1996 as implemented by the Federal Communications Commission, and offered one interesting and testable proposition. Specifically, JST propose that mandatory unbundling increases the riskiness and cyclicity of the ILEC's [Incumbent Local Exchange Carriers] economic performance and, hence, on the ILEC's weighted-average cost of capital. This hypothesis is tested empirically using standard procedures. We find no evidence supporting the hypothesis of JST regarding the ILECs' cost of equity capital.

Why ADco? Why Now?

An Economic Exploration into the Future of Industry Structure for the "Last Mile" in Local Telecommunications Markets

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Editor's Note: A version of this Article originally appeared as *Phoenix Center Policy Paper No. 12*.¹

I. INTRODUCTION

It is now more than five years since the passage of the landmark Telecommunications Act of 1996 (1996 Act), but instead of flourishing competition, the competitive local carrier sector has experienced a financial

1. T. Randolph Beard et al., *Why ADco? Why Now? An Economic Exploration into the Future of Industry Structure for the "Last Mile" in Local Telecommunications Markets* (Phoenix Ctr. Policy Paper No. 12, Nov. 2001), available at <http://www.phoenix-center.org/papers/PCP12.pdf>.

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- [illegible]

On the one hand, given the incumbents' near-complete dominance of the local access market, local access is non-competitive, a market where a firm can purchase local access at just and reasonable rates that will be provisioned on a timely basis. Acquiring needed inputs (i.e., elements) from the incumbents at just and reasonable rates and providing them to rivals is not a viable option. After all, dominant firms do not typically facilitate the demise of their dominance. This is not an irrational concept, because no firm will ever be enthusiastic about consciously going against its own self-interests by selling its vital key input of production (i.e., loops) to an LEC, while the 1996 Act requires the LECs to provide such elements, the Act did little to fundamentally alter economic incentives. So long as this inherent wholesale-supplier-retail-competition conflict exists between an LEC and a CLEC, then the LECs' ability to manipulate prices for

- [illegible]

merits of an untapped market-based third option for local access: the alternative distribution company ("ADCo"), which essentially is a wholesale "carriers' carrier" for local network "last-mile" access.

The "carriers' carrier" is not a new concept to telecommunications. Many long-haul networks, both national and regional, are built and operated as a "carriers' carrier." The economic forces that create a wholesale market in the long-distance industry, where about six nationwide and numerous regional networks support well over 500 retailers, are no less present in the local exchange. Indeed, those economic forces—economies of scale, economies of density, and sunk costs—are even more important in the local exchange than in long-distance, where fiber deployment in metropolitan markets is about twelve times as expensive as long-haul fiber networks.¹⁵ As such, the case for a "carriers' carrier" in the local exchange market at this stage of the telecommunications industry restructuring process is compelling.

More importantly, given its wholesale entry strategy, the ADCo provides for new entrants a viable economic solution to the problems raised by the inherent incentive of an incumbent industry to discriminate to protect its profits. This issue of incentives is key to understanding the current ill-understanding of the significant incentives of the incumbents to unduly discriminate against their rivals, not to mention also understanding the local exchange market, suggests that neither of the two alternatives for facilitating competition offer substantial promise as a long-term solution to monopoly in the local exchange marketplace. So, what to do? How do we go from "one" firm to "many" firms in an economically efficient manner—the *raison d'être* of market "restructuring"? This Article will explore the

analysis first set forth in Phoenix Center Policy Paper No. 10,¹⁶ will briefly

14. An "ADCo" is a very different concept from a "carrier." A "carrier" is defined by the structural separation of the incumbent's local access network facilities from the incumbent's marketing operations. See, e.g., Roy L. Murrell, "Promoting Telecommunications Competition: The Long-Term View," available at <http://www.econnet.com/royllm/Long-Term-View.html> (last visited Jan. 22, 2002); Murrell, Murrell, & Loop Co. is the Only Game in Town, *Comm. Week* (Sept. 16, 2001), in *ADCo*, however, by the entry of a completely new firm that competes as exclusive wholesale entry strategy for local access from the outside.

15. See *Trends in Telephone Service*, Industry Analysis Division, FCC Common Carrier Bureau, 10-12 M.L.R. 10-6 (2000), available at <http://www.fcc.gov/bureaus/commcarr/bureau/Report-FCC-Stat-Share-Link1A-D-2000.pdf>.

16. Dan Sweeney, *City of Lights: The Pricing of Fiber Built-out: A Special Report*, Competitive Carriers, Aug. 1, 2001, at 6, 7.

17. See Policy Paper No. 10, *supra* note 12.

elements and to control quality leaves sufficient room for LLCs to subrogate transactions, defined as the ability to increase the cost of a rival's key input of production by nonprice behavior between itself and LLCs.¹⁷

On the other hand, as the relative paucity of alternative local networks and rampant bankruptcy in the CLC industry demonstrates, the economics of self-supply are not particularly compelling either. As explained below, telecommunications is an extremely expensive business, and many CLCs are discovering to their dismay and chagrin that they cannot achieve sufficient economies of scale, scope, or density to warrant the capital required to build various components, even relatively small components, of the local exchange network from the ground up. The large sunk costs required to construct local exchange networks greatly increase the risk of entry and severely limit the number of financially viable alternative "last-mile" networks in most local markets.¹⁸ Simply put, the supply-side economics of the local exchange market prohibit competition among large numbers of network-based firms. The hope for large-numbers competition among network-based firms under current and foreseeable market conditions is sheer fantasy.¹⁹

Accordingly, the tenuous relationship between a retail wholesale LLC supplier and its retail competitor-consumer (CLC), as well as the substantial scale economies and sunk costs required to participate in the local exchange market, suggest that neither of the two alternatives for facilitating competition offer substantial promise as a long-term solution to monopoly in the local exchange marketplace. So, what to do? How do we go from "one" firm to "many" firms in an economically efficient manner—the *raison d'être* of market "restructuring"? This Article will explore the

11. The definition of the term "subrogate" included among witnesses in T. Randolph Hurd et al., *Regulation, Vertical Integration and Subrogation*, 49 J. Bus. 319 (2001) and will be used passim. For a full explanation of the subrogate concept, see Section IV.

12. Limitations on the number of viable firms are not restricted to the "last mile." Rather, any segment of the network characterized by sunk costs and scale economies has limited opportunities for successful entry. For a thorough discussion of the effects of sunk costs on entry and industry structure, see John Sutton, *Sunk Costs and Market Structures: Entry, Competition, and the Evolution of Communications Industries*, in J. B. Dvorak & George S. Ford, *Changing Industry Structure: The Economics of Entry and Exit* (1991). For a similar analysis applied to the communications industries, see J. B. Dvorak & George S. Ford, *Changing Industry Structure: The Economics of Entry and Exit* (1991).

13. Federal Communications Commission Chairman Michael K. Powell, Address at the National Summit on Broadband Deployment (Oct. 25, 2001), available at <http://www.fcc.gov/speeches/For2001/010101broadband.htm>; von Sahndorf, Address at the Golden Gate Communications X Conference (Oct. 4, 2001) at <http://www.vonmehrdorf.com/news/index.cfm?Speeches/For2001/010101broadband.htm>.

14. *Competition* (Thomas C. Policy Paper No. 10, Apr. 2001), available at <http://www.competition.com/PolicyPaper/PolicyPaper10.pdf>.

15. See *Trends in Telephone Service*, Industry Analysis Division, FCC Common Carrier Bureau, 10-12 M.L.R. 10-6 (2000), available at <http://www.fcc.gov/bureaus/commcarr/bureau/Report-FCC-Stat-Share-Link1A-D-2000.pdf>.

16. Dan Sweeney, *City of Lights: The Pricing of Fiber Built-out: A Special Report*, Competitive Carriers, Aug. 1, 2001, at 6, 7.

17. See Policy Paper No. 10, *supra* note 12.

Option 1:

Third, this Article will explore the full impact of the incumbents' incentive to frustrate competitive entry by selling forth a simple economic model that analyzes the incentives of a vertically integrated supplier...

and, as in the case of the other, the system is a monopoly.

A. Introduction

A. introduction

20 This model assumes that either economies of scale or density exist, but the form of "economies of scale" is not throughout this paper. "Economies of density" describes the relationship between costs and output, while "economies of scale" describes the relationship of costs and the number of firms in an industry. The relationship of costs and the number of firms in an industry is the subject of the paper by J. B. Davis and J. B. Davis, "The relationship of costs and the number of firms in an industry," *Journal of Industrial Economics*, 1974, 22, 1-14. The relationship of costs and the number of firms in an industry is the subject of the paper by J. B. Davis and J. B. Davis, "The relationship of costs and the number of firms in an industry," *Journal of Industrial Economics*, 1974, 22, 1-14. The relationship of costs and the number of firms in an industry is the subject of the paper by J. B. Davis and J. B. Davis, "The relationship of costs and the number of firms in an industry," *Journal of Industrial Economics*, 1974, 22, 1-14.

enormous importance. The role of competition policy is to create an environment in which feasible long-term arrangements—those that are consistent with robust competition—can be made place. One example of such analysis is provided in *Changing Industry Structure: The Economics of Entry and Price Competition*, in this paper. Drs. Duvall and Ford show that the equilibrium level of concentration in telecommunications markets will be relatively high. The presence of sunk costs, in any industry, limits the number of firms that can profitably serve a market. The larger sunk costs are relative to market size, the higher the equilibrium level of concentration.

(11)

where ϕ is an index of the intensity of price competition ($\phi \geq 0$, where $\phi = 0$ corresponds to perfect competition, or highly intense, price competition, and $\phi = 1$ corresponds to Cournot competition in quantities), λ is market size, K measures the sunk entry costs, and $1/N^*$ is the equilibrium level of industry concentration and is equal to the Herfindahl-Hirschman index ($1/(N^*)^2$) under the assumption of identical firms. For simplicity, the number of firms supplying a market is assumed to be constant and equal to N . The number of firms supplying a market is positively related to the size of the market (N), but inversely related to the intensity of price competition (ϕ) and the sunk entry costs (K). The firm's profit function is given by $\pi_i = p_i q_i - c_i q_i$, where p_i is the price charged by firm i , q_i is the quantity supplied by firm i , and c_i is the marginal cost of firm i . Likewise, the more intense the price competition, the higher the intensity of competition.

The inability of local telecommunications markets to support high levels of competition can be illustrated by example. Telecommunications firms (RNs) target residential customers in densely populated markets with their own network facilities, over which it provides telephone, data, and wireless services.¹⁰ According to its financial documents, RCN has \$2.75 billion in

22. Policy Paper No. 10, supra note 17.

23. The model assumes all firms are identical. The limit, the sum of the squared market shares of relevant firms, is a commonly used measure of industry concentration.

24. Generally, price competition is expected to be weakest in highly concentrated markets. When entry requires sunk costs, however, this expectation can be invalid.

25. According to RCN's 10-Q Form, about 12% of RCN's phone customers are "not" supplied over the ILIC's network via resalo. RCN's (QAP, 2001) Third Quarter Financial 10-Q (Nov. 9, 2001), available at <http://www.rcn.com/investor/index.html>

Plant investment runs about \$1,750 per house paid by the homeowner, or 1 million homes, or 1 million marketable home or about \$5,500 per customer. A rough estimate of RCT's monthly plant costs (assuming a 15% hurdle rate and 15-year payback) is about \$25 per home passed. Average monthly revenue per subscriber is about \$150 and direct costs are about 46% of revenues, implying a gross monthly contribution margin of about 59%. In order to cover plant costs with its net revenues, RCT needs a penetration rate of about 35% to 40%, and that is in the more densely populated markets targeted by RCT over a network capable of generating service worth \$110 per subscriber. Finally, if it 33% to 40% penetration rate is required for profitability, then only two firms can profitably serve the same market, and RCT and the incumbent make six.

To construct an RCT-style network for every household in the United States, the plant investment and total entry costs would be about \$100 billion and \$600 billion, respectively.²⁸ Clearly, network-based entry is incredibly costly and is not something that is replicable by numerous firms in the same market.

Summary, the cost of metropolitan utility fiber drops and spreads out considerably in providing service to large businesses and increasingly as well. Some fiber companies estimate that fiber deployment in a metropolitan area nonindustrialy costs \$3 million per mile. Thus, construction of a large metropolitan or mesh network, most if not all of whose costs can be amortized over the life of the network, is not as expensive as it once was. The services provided over metropolitan fiber networks vary, as are the costs, roughly half of the cost of metropolitan fiber are installation expenses.

36. RCM Corp., 2000 Annual Report (2001), available at <http://www.rcm.com/investor/index.html>. Marketable houses are those houses that RCM's network can

27. Values are based on R.C.N.'s 1998, 1999, and 2000 Annual Reports. For example, between 1996 and 2000, R.C.N.'s Plant and Property grew by 21.5 billion while its marketable foreign grew by about \$50,000. In 1999, R.C.N.'s compensation rate was marketable income divided by 17.5, or 45%. For 1999 Annual Report (2000), available at <http://www.rcn.com/investorlink.htm>; R.C.N. Corp., 1998 Annual Report (1999), available at <http://www.rcn.com/investorlink.htm>.

28. With a reasonable guess of the minimum penetration μ that needs to cover its costs, the number of firms that can operate in a market is the integer part of the inverse of the minimum penetration (e.g., $1/0.40 = 2.5$).

the cost differentials and population distribution across density zones are similar to those estimated by the HAI Model (v. 2.2.2), a local element long-run incremental cost model developed by HAI and Associates. ATRC and ATRC' are defined as:

be about \$1 for every \$1 of plant (see Table 1, supra).

10. THE CLASS OF PERIODICAL PUBLICATIONS WHICH ARE
11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 8

do the size and scope of these networks. Thus, simple profitability models like the R/CN example are difficult to construct. However, the fact that less than 10% of buildings have fiber drops suggests that the sunk costs in the network are sizeable relative to market size.

The implication of the economic theory is clear: the number of firms supplying a market is not unbounded when there are sunk costs. Given that much of the entry cost of a telecommunications network is sunk and large relative to market size, industry concentration in telecommunications markets is expected to be relatively high—in other words, there will be few firms in the market. Indeed, until recently, the presumption was that the local exchange market was a natural monopoly (i.e., $N^* = 1$). While the technology and law governing the telecommunications industry has changed, these changes have not totally altered the supply-side economics of the industry. Large numbers competition among network-based local exchange carriers is forbidden by the supply-side economics of the industry.

B. Sunk Costs and the Necessity of Achieving Sufficient Economies of Scale and Scope

The fact that economies of scale (or density) and sunk costs play a key role in telecommunications network deployment goes without saying. In order to achieve profitability in a reasonable time frame, therefore, the large fixed costs of the plant must be averaged out over a large quantity of services that are sold relatively quickly, ignoring the reality that put many a CLEC into bankruptcy.

An important misconception policymakers and Wall Street have about the telecommunications industry is that entry into telecommunications is somehow limited to just the cost of network construction and architecture. (Quite to the contrary, entry into telecommunications business requires the additional commitment of tremendous fixed and sunk costs to cover the costs of billing systems, regulatory efforts and responses, pre-positions of flow, general administrative costs, and, perhaps most significant of all, customer acquisition and retention costs.)

For example, Douglas Caltel estimates AT&T's annual marketing expenses to be approximately \$2 billion per year from 1994 through 1997.³⁴ (It also provides evidence that marketing expenses in the long-distance industry are subject to economies of scale. Other sources indicate that

34. Douglas A. Caltel, "Some Cases of Competition 5 (Jan. 24, 1999) (unpublished manuscript on file with author), available at <http://www.gottlieb.org>.
Waltuch comm. Apr. 10, 2001, at <http://www.waltuch.com/news/telecom/2001-1.html>.

acquisition costs for residential local or long-distance customers are about \$150 per customer, virtually all of which is sunk.³⁵ For larger business customers and buildings, where the stakes and margins are relatively high, the acquisition costs are expected to be sizeable.

Similarly, regulatory costs are nontrivial entry investments. Industry experts estimate that approximately 10% of the entry costs for metropolitan fiber rings and spurs are related to obtaining government approval in some cases. "[d]eliberations involving local government entities, public utilities and private claimants can extend well beyond a year, and in some cases may never reach a successful conclusion, abating the project before a single fiber can be buried."³⁶ Clearly, approval costs incurred for a project later abandoned have little or no value and are thus sunk. As noted *supra*, the average cost of a mile of fiber deployed in a metropolitan market is estimated by some to be \$3 million; the sunk costs related to regulatory approval are nontrivial and may represent a formidable entry barrier. Table 1 illustrates the proportion of facilities' investment (measured as not plant) to total entry costs for a sample of CLECs. Entry costs are measured as the spent portion of capital invested in the firm including debt and equity.

35. See *for example*, the *Bell's Toll*, Bernard Research, Feb. 1997, at 55-56; see also Press Release, Home Phone Services, Inc. Reports Record Third Quarter Results (Oct. 27, 1999), available at <http://www.hps.com/pressrel/qtr3.htm>.
36. See, e.g., Declaration of A. David Kelley and Richard A. Chandler, 11/11 Comments of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm> (quoting *Declaration of the Telecommunications Act of 1996*, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>).
37. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
38. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
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40. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
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42. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
43. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
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52. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
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62. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
63. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
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74. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
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124. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
125. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
126. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
127. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
128. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
129. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
130. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
131. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
132. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
133. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
134. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
135. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
136. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
137. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
138. See *for example*, Declaration of the Telecommunications Act of 1996, CC Docket No. 96-98, 98-99, 11/11, 2001, available at <http://www.fcc.gov/prod/record/decleration-98.htm>.
139. See *for example*, Declaration of the

Table 1. Entry Costs and Plant

| | Entry Costs (E)
(in thousands) | Net Plant (P)
(in thousands) | E/P | P/E |
|--------------|-----------------------------------|---------------------------------|------|-----|
| XO | \$10,739 | \$3,505 | 3.06 | 34% |
| Alliance | \$2,083 | \$939 | 2.22 | 45% |
| RCN | \$4,859 | \$2,331 | 2.08 | 48% |
| Covad | \$2,414 | \$294 | 8.20 | 12% |
| Net east | \$8,260 | \$3,230 | 2.57 | 39% |
| Talk America | \$429 | \$80 | 5.37 | 19% |
| Northpoint | \$1,041 | \$455 | 2.29 | 44% |
| ITC/McDiacom | \$1,036 | \$708 | 1.46 | 68% |
| US LEC | \$369 | \$191 | 1.93 | 52% |
| U.S. Average | | \$1.06 | | 38% |

As the table illustrates, investment in plant is typically a very small proportion of total dollars invested. As Table 1 further demonstrates, the ratios of expense costs to plant costs range significantly from ITC's relatively low ratio of 1.5:1 to Covad's ratio of 8:1. On average, however, net plant amounts to about 38%, approximately one-third of total entry costs for this sample. In other words, for every dollar of investment in plant and equipment, an additional \$2 of entry costs are incurred on average. There is no reason to suspect that these additional entry costs are less sunk than plant and equipment, but there is good reason to believe such costs are more sunk.

When considering the prospects and sustainability of competitive entry in telecommunications markets, therefore, economics of scale and sunk costs cannot be ignored. Nor can the focus on such economies and sunk costs be limited to network investment. Indeed, as revealed in the following Sections, the extent of scale economies is an important determinant not only in the level of industry concentration, but also in the type of firms that exist in equilibrium. As the model explains *infra*, size matters, but in conflicting ways.

From 10-Q (Aug. 14, 2001), available at <http://www.nasdaq.com>; News release, 2001 Securities Analysts Forum 10-Q (Aug. 14, 2001), available at <http://www.sec.gov/Archives/edgar/data/1080958/0000000296240000117500040929624-09-0001175.txt>; ITC Datacast, Inc., 2001 Securities Analysts Forum 10-Q (Aug. 14, 2001), available at <http://www.sec.gov/Archives/edgar/data/1041954/0000000296240000117500040929624-09-0001175.txt>; J10qast, US LEC Corp., 2001 Securities Analysts Forum 10-Q (Aug. 6, 2001), available at <http://www.sec.gov/Archives/edgar/data/1054290/00001017062015000698/010qast>.

40. Plant and equipment can at least be sold in some instances.

C. Unbundling and the Necessity of Creating Sufficient Noncumbent Demand

One of the cornerstones of the 1996 Act is the unbundling obligation imposed on the ILECs. The original idea behind unbundling is that "leapfrog" those barriers to accelerate the pace of competition. In its most unbundling—i.e., a weak form of divestiture—would permit new firms to purchase its primary inputs of production from its rivals) would then build-out as conditions warrant. Such a strategy is often referred to as a "smart-build" approach. This is precisely what the FCC did in its 1980 MTS/WATS Resale Decision to great success for the U.S. long-distance market.

While the development of competition in the interexchange industry provides important insight, it is crucial to understand that the scale and/or density economies in the local market are more significant than in long-haul networks. Consequently, it is unclear whether individual firms purchasing unbundled network elements will ever acquire sufficient market share to justify the construction of networks for their exclusive use. Without the ability to obtain alternative capacity, however, these firms' dependence on the incumbent will adversely affect their ability to succeed in the long run.

This is not to say that the unbundling provisions of the 1996 Act are a failure and should be eliminated. On the contrary, unbundling is critical to developing sufficient noncumbent demand for new network-based demand for network elements becomes less concentrated (i.e., the ILEC does not serve all customers), the potential for rapid and large migrations of demand off the incumbent's network to an alternative network exists. While the dominant incumbent provider will rarely, if ever, demand the facilities of an alternative element supplier, the risk of entry by a competitor is considerable without existing demand for elements. (The proverbial "build it and they will come" proved successful in Hollywood, but not for CLBCs.) Yet, if unbundling mitigates substantial portions of

41. 47 U.S.C. § 251(c)(3)(B)(iv), V. 2000.
42. See *MarTel & Snywak, supra* note 4, at 308. The term "smart build" has other meanings as well. In some contexts, for example, "smart build" refers to a slow, meticulous build-out strategy designed to maximize market penetration with limited capital resources.

telecommunications demand to new entrants, then an ADC can enter and consolidate (or aggregate) this new nonincumbent demand for network elements dispersed among the various firms who currently purchase UNEs from the incumbent, much like building a shopping center with your anchor tenants already secured. In so doing, network-based entry occurs both in the form of new alternative network construction, and in terms of new technology investment (e.g., interconnecting a sophisticated database to the incumbents' advanced intelligent network ("AIN")) to permit advanced managed-IP products and services. Large-numbers competition occurs at the retail and application level, whereas small-numbers competition occurs at the wholesale or network level. This arrangement is most compatible with the underlying economics of the telecommunications industry.

III. THE CURRENT SITUATION: ENTRY AFTER THE 1996 ACT

In this Section, this Article examines two primary forms of CLEC entry strategy observed since the passage of the 1996 Act. Entry strategies are varied, so it is difficult to classify CLECs into broad categories. However, there appear to be two very different entry modes at a high level of generality in use: entrants that depend heavily on ILEC facilities, and those that do not. While these entry strategies are apparently quite different, similarities exist between the two. Nearly all entrants, for example, must deal with the ILEC in some way.

A. Element-Dependent Entrants: The "Diggers"

First, there are those entrants that rely heavily on the elements of the ILEC (the dominant incumbent, integrated supplier) called element-dependent entrants ("EDEs"). This group of entrants ranges from those using local service resale to those combining ILECs' local distribution plant, from local loops to high capacity circuits, with self-supplied elements. DSL providers, for example, rely on ILEC loops and collocation space. Switch-based entrants also rely almost exclusively on ILEC loop plant and provisioning labor, such as hot-cuts, which is combined with self-supplied switching. UNE-P, or the combination of loops, local switching, and transport, is an element-dependent entry strategy that relies heavily on ILEC elements. In some cases, however, the UNE-P CLECs integrate their own technology into the platform to customize the service.⁴¹ In fact, with the exception of total service resale, virtually all EDEs integrate some type

41. For example, Z-Tel Communications integrates a variety of call control features, Internet functionality, and voicemail with the UNE-P. Z-Tel Technologies, Inc., 2000 Annual Form 10-K (Mar. 28, 2000), available at <http://www.ztel.com/efiles.php?sym=ZTEL&req=vol&ind=1&id=2&page=2&ctres=0>.

of facilities with the ILEC network. Thus, as noted above, while EDEs may not be new "network" facilities-based entrants, they should nonetheless be considered to be facilities-based entrants.

A problem faced by all EDEs is the ILEC's incentive to impede new entry, and examples of these incentives in action are readily available.

44. See, e.g., Yuki Noguchi, *CLECs Blame Bell, Rell, Attime Hoopings, Some Blame Agencies*, *WASH. POST*, Dec. 16, 2000, at E1; Peter S. Goshorn, *FCC Chief Questions Plans*, *FCC* ("A Enforcement Bureau busts them every. For example:

- On September 14, 2001, the FCC's Enforcement Bureau announced that it entered into a Consent Decree with Verizon Communications, Inc. ("Verizon"), under which Verizon will make a "voluntary payment" of \$77,000 to the U.S. Treasury, and will take certain civil actions regarding its collocation practices. Verizon Comm., Inc., *Order*, 16 F.C.C.R. 16270 (Sept. 14, 2001).

- On May 29, 2001, the FCC affirmed the \$48,000 fine imposed by the Commission's Enforcement Bureau in March 2001 against SBC Communications, Inc. ("SBC") for violating reporting requirements that the Commission had imposed pursuant to its approval of the merger application of SBC and Southwestern Bell Communications, Inc., Apparent Liability for Forfeiture, *Order on Review*, 16 F.C.C.R. 12366, 23 Comm. Reg. (P.R.) 1547 (May 29, 2001).

- Similarly, on January 18, 2001, the FCC sought to fine SBC \$94,500 after an independent audit discovered that SBC failed to comply with the FCC's rules that require incumbent telephone companies to allow competing telephone companies to place equipment in the incumbents' offices. In particular, the Commission found that SBC failed to post promptly notices of all incumbents-owned sites that have run out of collocation space so competitors do not waste time and resources applying for collocation space when none exists. SBC Comm., Inc., Apparent Liability for Forfeiture, *Notice of Apparent Liability for Forfeiture*, 16 F.C.C.R. 1012 (Jan. 18, 2001).

- On November 2, 2000, the FCC settled with BellSouth Corporation to have them make a "voluntary payment" of \$750,000 to the U.S. Treasury and to take important steps to improve its compliance with FCC rules relating to the regulation of interconnection agreements between competing carriers. BellSouth Corp., *Order*, 15 F.C.C.R. 21756 (Nov. 2, 2000). Indeed, the FCC's investigation disclosed that, for more than six months in 1999, BellSouth failed to provide a competitive with cord data to support BellSouth's proposed prices for unbundled copper loops, despite the competitor's written request for such data. *Id.* para. 5. In addition to the \$750,000 voluntary payment, the Commission ordered BellSouth to adopt procedures for expedited access to confidential information, including issuance of a standard nondisclosure agreement that complies with the relevant FCC rules, and to adopt procedures for competitors to elevate disputes regarding disclosure of confidential information to higher levels within BellSouth. *Id.* paras. 13, 15. In addition, BellSouth will provide training to its negotiators concerning the relevant statutory and

